

FIG. 1

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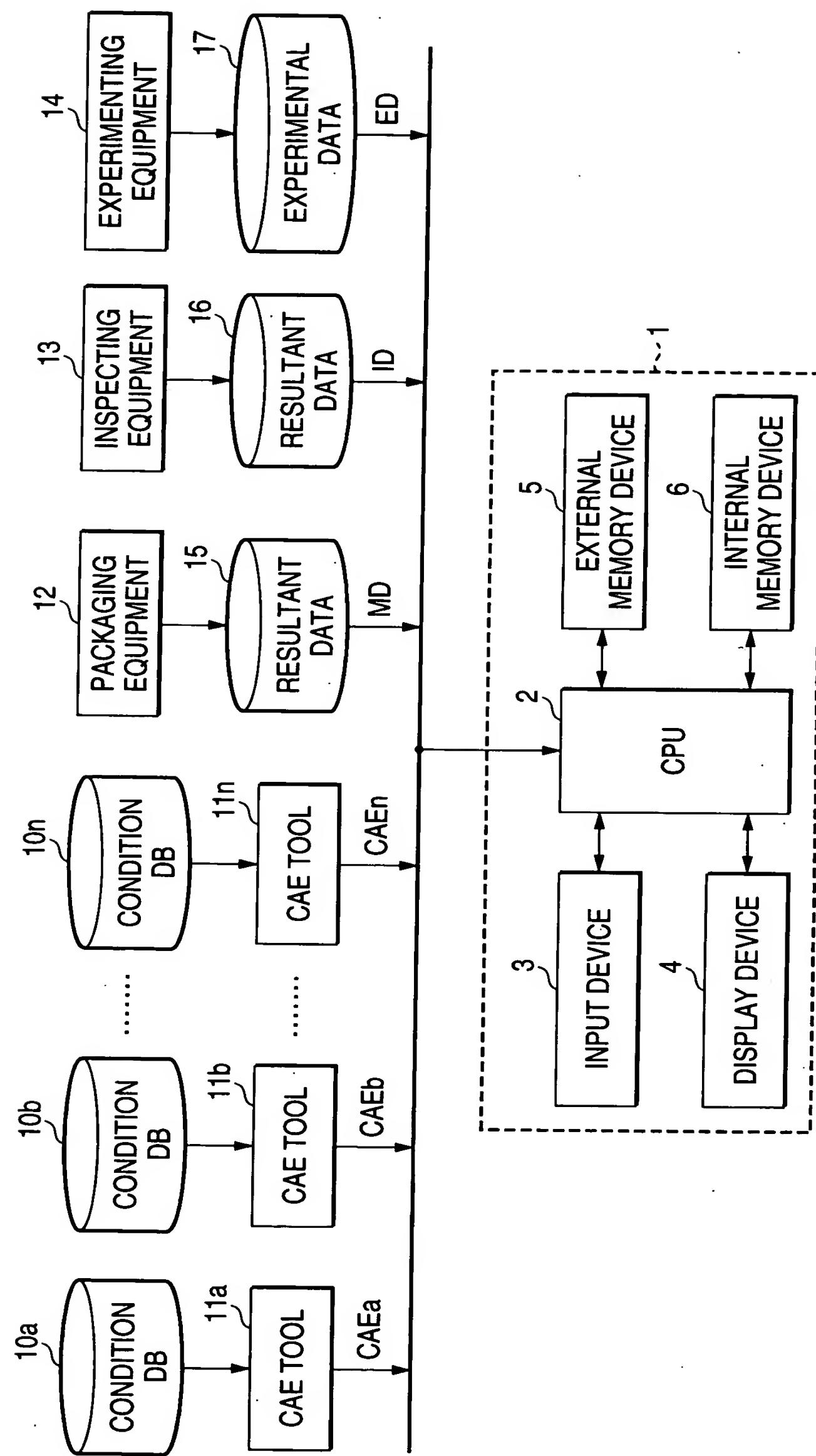


FIG. 2

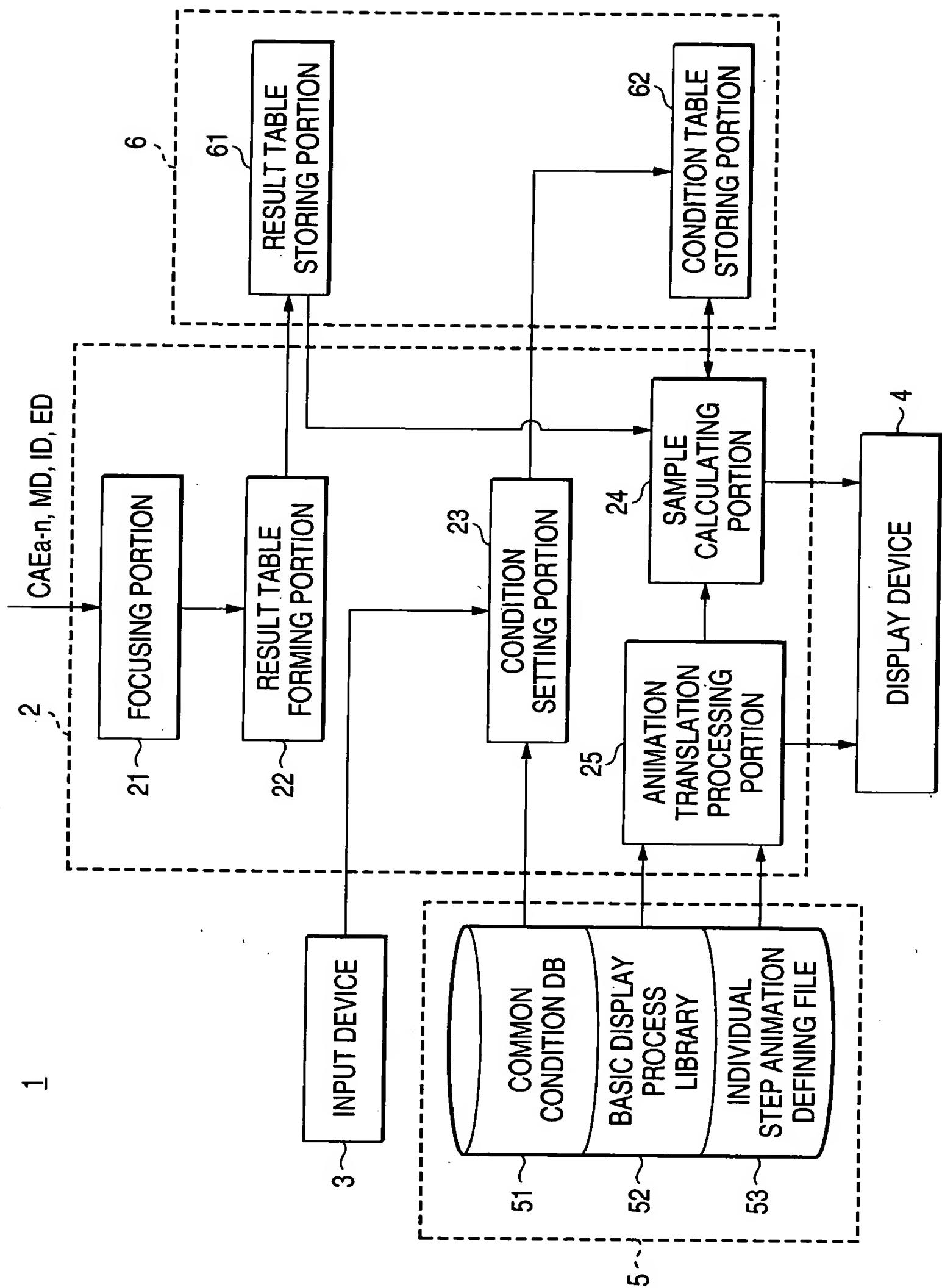


FIG. 3

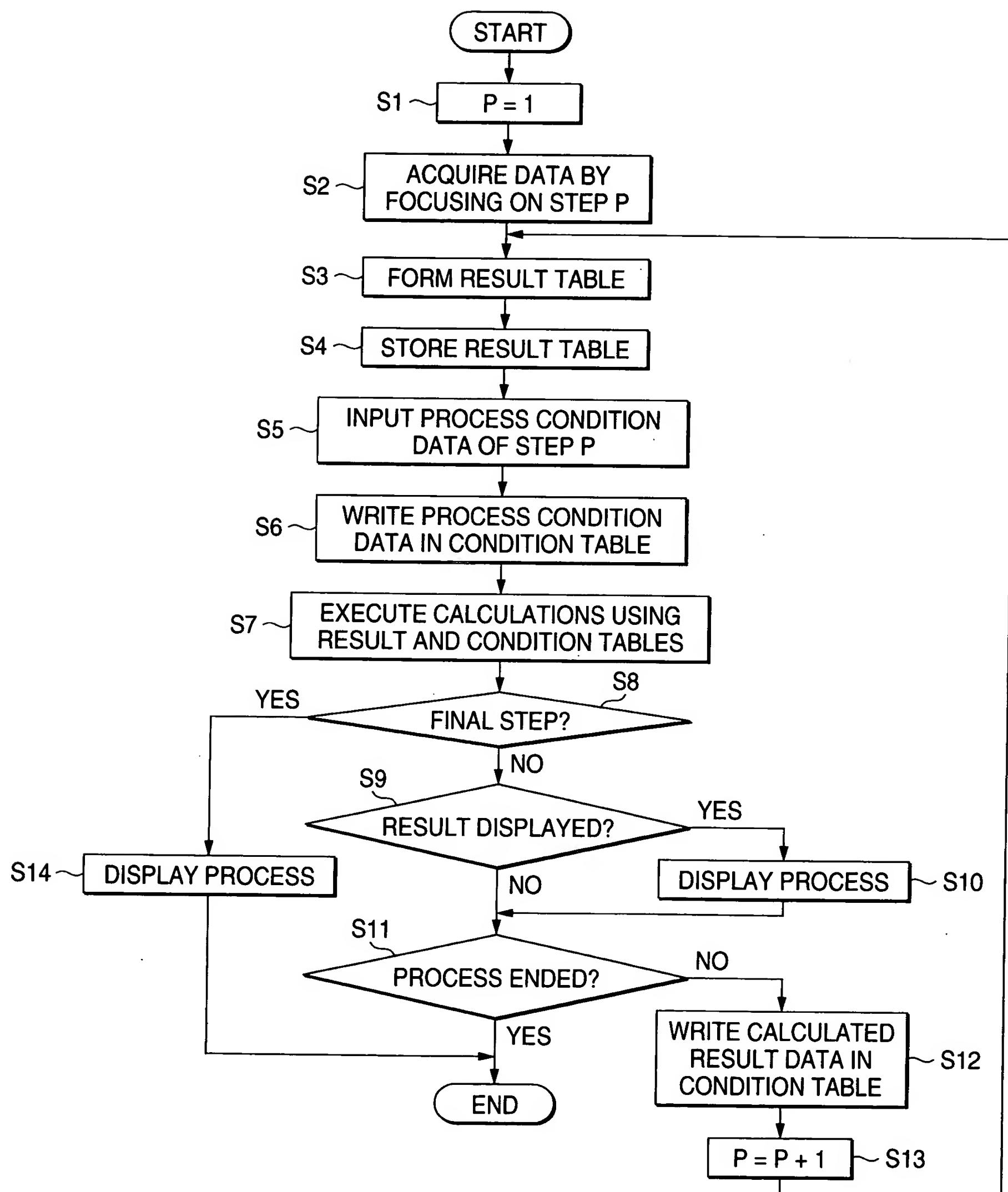


FIG. 4

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CONDITION DATA	VISCOSITY	Pa · s	20	40	60	80	100	...
	PARTICLE SIZE	μm	30	30	30	30	30	...
	FLUX	%	10	10	10	10	10	...
	MATERIAL	-	SnAgCu	SnAgCu	SnAgCu	SnAgCu	SnAgCu	...
	OPENING PORTION SIZE (x, y)	mm	0.5*0.5	0.5*0.5	0.5*0.5	0.5*0.5	0.5*0.5	...
	THICKNESS	mm	0.15	0.15	0.15	0.15	0.15	...
	PRINTING PRESSURE	Pa	25000	25000	25000	25000	25000	...
	SQUEEGEE ANGLE	°	70	70	70	70	70	...
	SQUEEGEE SPEED	mm/s	40	40	40	40	40	...
	PAT SIZE (x, y)	mm	0.6*0.6	0.6*0.6	0.6*0.6	0.6*0.6	0.6*0.6	...
OBJECT SUBSTRATE	CLEARANCE TO PRINTING MASK	μm	40	40	40	40	40	...
	SOLDER SIZE (x, y)	mm	0.6*0.6	0.5*0.5	...
	THICKNESS	mm	0.1	0.15	...
	POSITION VARIATION (STANDARD DEVIATION)	mm	0.05	0.05	...
RESULT DATA	SOLDER PRINTED RESULTS							

FIG. 5

FIG. 6

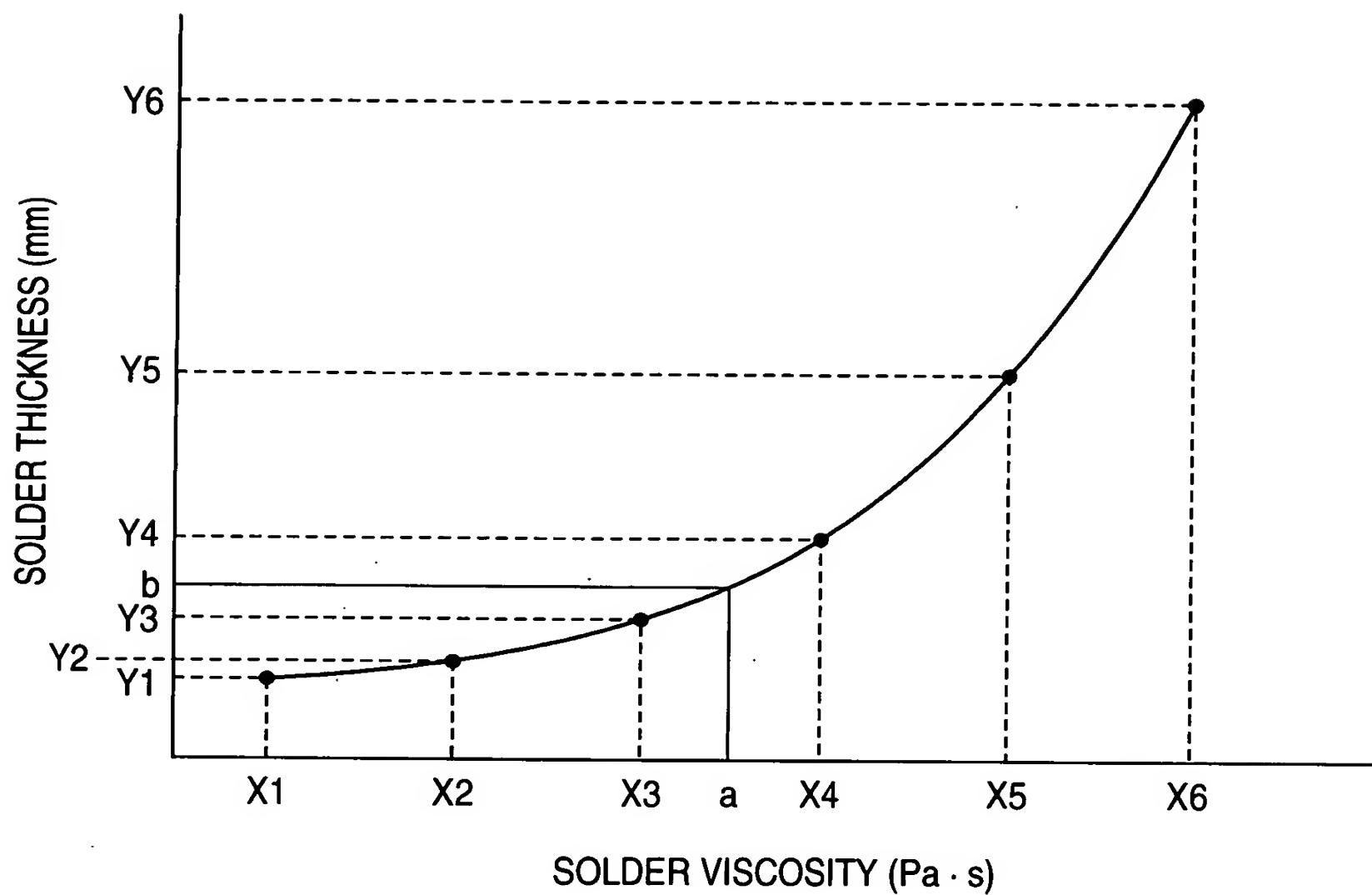


FIG. 7

CALCULATED RESULT DATA	SOLDER PRINTING RESULT	SOLDER SIZE (x, y)	mm	0.55*0.55
		THICKNESS	mm	0.125
		POSITION VARIATION (STANDARD DEVIATION)	mm	0.05
		MATERIAL	-	SnAgCu
		VISCOSITY	Pa · s	70

FIG. 8

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PARTS CONDITIONS		PARTS SIZE (x, y, z)	mm	1.0*0.5*0.2	1.0*0.5*0.2	1.0*0.5*0.8	1.0*0.5*1.0	...
MOUNTING DEVICE CONDITIONS		PARTS WEIGHT	g	...	0.1	0.2
		PARTS SUCTION POSITION (x, y)	mm	...	(0, 0)	(0, 0)	...	...
		NOZZLE TYPE	-	...	A	A	...	...
		SUCTION HEIGHT	mm	...	50	50	...	...
		MOUNTING SPEED (TYPE)	-	...	a	a	...	...
		SOLDER SIZE (x, y)	mm	...	0.55*0.55	0.55*0.55	...	...
		THICKNESS	mm	...	0.125	0.125	...	...
SOLDER PRINTING CONDITIONS		POSITION VARIATION (STANDARD DEVIATION)	mm	...	0.05	0.05	...	...
		VISCOOSITY	Pa . s	...	70	70	...	...
		MATERIAL	-	...	SnAgCu	SnAgCu	...	...
MOUNTED RESULT		POSITIONAL VARIATION (STANDARD DEVIATION)	mm	...	0.1	0.08	...	...
RESULT DATA								
1.0*0.5*0.2	1.0*0.5*0.2	1.0*0.5*0.8	1.0*0.5*1.0	...	...	...	...	...
0.1	0.2	0.2	0.2	...	...	...	...	...
(0, 0)	(0, 0)	(0, 0)	(0, 0)	...	...	...	...	...
A	A	A	A	...	...	...	...	...
50	50	50	50	...	...	...	...	...
a	a	a	a	...	...	...	...	...
0.55*0.55	0.55*0.55	0.55*0.55	0.55*0.55	...	...	...	...	...
0.125	0.125	0.125	0.125	...	...	...	...	...
0.05	0.05	0.05	0.05	...	...	...	...	...
70	70	70	70	...	...	...	...	...
SnAgCu	SnAgCu	SnAgCu	SnAgCu	...	...	...	...	...
0.1	0.08	0.08	0.08	...	...	...	...	...

FIG. 9

PROCESS CONDITION DATA	PARTS CONDITIONS	PARTS SIZE (x, y, z)	mm	1.0*0.5*0.4
		PARTS WEIGHT	g	0.1
	MOUNTING DEVICE CONDITIONS	PARTS SUCTION POSITION (x, y)	mm	(0, 0)
		NOZZLE TYPE	-	A
		SUCTION HEIGHT	mm	50
		MOUNTING SPEED (TYPE)	-	a
PRE-STEP CALCULATED RESULT DATA	SOLDER PRINTING CONDITIONS	SOLDER SIZE (x, y)	mm	0.55*0.55
		THICKNESS	mm	0.125
		POSITION VARIATION (STANDARD DEVIATION)	mm	0.05
		MATERIAL	-	SnAgCu
		VISCOSITY	Pa · s	70

FIG. 10

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REFLOW FURNACE CONDITIONS		CONDITION DATA					RESULT DATA	
ZONE 1 LOWER TEMPERATURE		°C	175	180	185	190	REFLOW RESULT	
ZONE 1 LOWER TEMPERATURE	°C	...	165	170	170	170	...	...
ZONE 2 UPPER TEMPERATURE	°C	...	165	170	170	170	...	...
ZONE 2 LOWER TEMPERATURE	°C	...	165	170	170	170	...	...
ZONE 3 UPPER TEMPERATURE	°C	...	170	175	175	175	...	...
ZONE 3 LOWER TEMPERATURE	°C	...	170	175	175	175	...	...
ZONE 4 UPPER TEMPERATURE	°C	...	205	210	210	210	...	...
ZONE 4 LOWER TEMPERATURE	°C	...	215	220	220	220	...	...
ZONE 5 UPPER TEMPERATURE	°C	...	255	260	260	260	...	...
ZONE 5 LOWER TEMPERATURE	°C	...	265	270	270	270	...	...
CARRYING SPEED	m/min	...	1.3	1.3	1.3	1.3	...	...
SOLDER SIZE (x, y)	mm	...	0.55*0.55	0.55*0.55	0.55*0.55	0.55*0.55	...	...
THICKNESS	mm	...	0.125	0.125	0.125	0.125	...	...
SOLDER PRINTING CONDITIONS	mm	...	0.05	0.05	0.05	0.05	...	...
POSITIONAL VARIATION (STANDARD DEVIATION)		Pa·s	SnAgCu	SnAgCu	SnAgCu	SnAgCu	REFLOW PROFILE	
MATERIAL	-	...	70	70	70	70	...	...
VISCOOSITY	Pa·s	...	1.0*0.5*0.4	1.0*0.5*0.4	1.0*0.5*0.4	1.0*0.5*0.4	...	...
PARTS CONDITIONS	mm	...	0.1	0.1	0.1	0.1	...	...
PARTS WEIGHT	g	...	0.1	0.1	0.1	0.1	...	...
POSITIONAL VARIATION (STANDARD DEVIATION)	mm	...	0.1	0.1	0.1	0.1	...	...
POSITIONAL VARIATION (STANDARD DEVIATION)	mm	...	0.04	0.04	0.04	0.03
TEMPERATURE PROFILE	-	...	γ	γ	γ	β

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FIG. 11

PROCESS CONDITION DATA	REFLOW FURNACE CONDITIONS	ZONE 1 UPPER TEMPERATURE	°C	185
		ZONE 1 LOWER TEMPERATURE	°C	170
		ZONE 2 UPPER TEMPERATURE	°C	170
		ZONE 2 LOWER TEMPERATURE	°C	170
		ZONE 3 UPPER TEMPERATURE	°C	175
		ZONE 3 LOWER TEMPERATURE	°C	175
		ZONE 4 UPPER TEMPERATURE	°C	210
		ZONE 4 LOWER TEMPERATURE	°C	220
		ZONE 5 UPPER TEMPERATURE	°C	260
		ZONE 5 LOWER TEMPERATURE	°C	270
PRE-STEP CALCULATED RESULT DATA	SOLDER PRINTING CONDITIONS	CARRYING SPEED	m/min	1.3
		SOLDER SIZE (x, y)	mm	0.55*0.55
		THICKNESS	mm	0.125
		POSITIONAL VARIATION (STANDARD DEVIATION)	mm	0.05
		MATERIAL	-	SnAgCu
	PARTS CONDITIONS	VISCOSITY	Pa · s	70
		PARTS SIZE (x, y, z)	mm	1.0*0.5*0.4
		PARTS WEIGHT	g	0.1
		POSITIONAL VARIATION (STANDARD DEVIATION)	mm	0.1

FIG. 12

SIMULATION CONDITION		41	
SOLDER PRINTING CONDITIONS	SOLDER SIZE (x, y)	mm	0.56*0.56
	THICKNESS	mm	0.125
	POSITIONAL VARIATION (STANDARD DEVIATION)	mm	0.05
	MATERIAL	-	SnAgCu
	VISCOSITY	Pa·s	70
PARTS CONDITIONS	PARTS SIZE (x, y, z)	mm	1.0*0.5*0.4
	PARTS WEIGHT	g	0.1
	POSITIONAL VARIATION (STANDARD DEVIATION)	mm	0.1
SUBSTRATE CONDITION	PAT SIZE (x, y)	mm	0.6*0.6
	ZONE 1 UPPER TEMPERATURE	°C	185
REFLOW FURNACE CONDITIONS	ZONE 1 LOWER TEMPERATURE	°C	170
	ZONE 2 UPPER TEMPERATURE	°C	170
	ZONE 2 LOWER TEMPERATURE	°C	170
	ZONE 3 UPPER TEMPERATURE	°C	175
	ZONE 3 LOWER TEMPERATURE	°C	175
	ZONE 4 UPPER TEMPERATURE	°C	210
	ZONE 4 LOWER TEMPERATURE	°C	220
	ZONE 5 UPPER TEMPERATURE	°C	260
	ZONE 5 LOWER TEMPERATURE	°C	270
	CARRYING SPEED	m/min	1.3

